

# American Time Use Survey User's Guide

## 2004

Bureau of Labor Statistics  
and  
U.S. Census Bureau

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CHAPTER 1: SURVEY OBJECTIVES .....	1
CHAPTER 2: HISTORY OF THE AMERICAN TIME USE SURVEY .....	3
CHAPTER 3: SURVEY DESIGN .....	8
CHAPTER 4: DATA COLLECTION .....	11
CHAPTER 5: CODING THE DATA .....	15
CHAPTER 6: DATA PROCESSING, EDITING, AND IMPUTATION .....	19
Exhibit 6.1: Imputation Methods	
Exhibit 6.2: Data-Processing Files	
CHAPTER 7: WEIGHTS AND ESTIMATION .....	23
CHAPTER 8: PUBLICATIONS AND PUBLIC USE DATA FILES .....	30
CONCEPTS AND DEFINITIONS	
APPENDIX A: Advance Letter to Households with Telephones	
APPENDIX B: Advance Letter to Households without a Telephone	
APPENDIX C: Frequently Asked Questions (sent with both advance letters)	
APPENDIX D: Refusal Conversion Letter	
APPENDIX E: Link to the 2003 Activity Coding Lexicon	
APPENDIX F: Bridge between Published Tables Major Categories and ATUS Coding Lexicon Major Categories	
APPENDIX G: Link to the 2003 Coding Rules Manual	

## CHAPTER 1: SURVEY OBJECTIVES

### 1.1 WHAT DO THE AMERICAN TIME USE SURVEY DATA MEASURE?

The American Time Use Survey (ATUS) is the Nation's first federally administered, continuous survey on time use in the United States. The goal of the survey is to measure how people divide their time among life's activities.

ATUS interviews randomly selected individuals from a subset of the households that complete their eighth and final month interviews for the Current Population Survey (CPS). ATUS respondents are interviewed only one time about how they spent their time on the previous day, where they were, and whom they were with. The survey is sponsored by the Bureau of Labor Statistics and is conducted by the U.S. Census Bureau.

The major purpose of ATUS is to develop nationally representative estimates of how people spend their time. Many ATUS users are interested in the amount of time Americans spend doing unpaid, nonmarket work. These include unpaid childcare and adult care, housework, and volunteering. The survey also provides information on the amount of time people spend in many other activities, such as religious activities, socializing, exercising, and relaxing. In addition to collecting data about what people did on the day before the interview, ATUS collects information about where and with whom each activity occurred, and whether the activities were done for one's job or business. Demographic information—including sex, race, age, educational attainment, occupation, income, marital status, and the presence of children in the household—also is available for each respondent. Although some of these variables are updated during the ATUS interview, most of this information comes from earlier CPS interviews, as the ATUS sample is drawn from a subset of households that completed the CPS.

### 1.2 HOW CAN THE SURVEY RESULTS BE USED?

ATUS can significantly further understanding about how Americans spend their time. Because ATUS data are collected on an ongoing, monthly basis, time-series data eventually will be available, enabling analysts to identify any changes in how people spend their time. ATUS data can provide a wide range of applications for different users.

For example, many economists are interested in estimating the monetary value of nonmarket work. ATUS collects information about time spent doing both paid and unpaid activities. By using time-use data in conjunction with earnings data, economists are able to estimate the value of nonmarket production—such as housework, volunteer work, and childcare. Some efforts are being undertaken (outside BLS) to account for such measures when developing aggregate output estimates, including gross domestic product. Similarly, lawyers can use this type of information when calculating the value of lost time (or life) in personal injury or wrongful death cases, thus allowing judges and juries to more accurately determine reasonable compensation in such cases. Policymakers will use ATUS data to better understand the economic and noneconomic effects of their policy decisions. Likewise, businesses can use ATUS data on how people spend their time to determine what kinds of goods and services to develop or market to a particular group.

ATUS data also include information on with whom and where respondents spend their time. From this, sociologists can determine, for example, the average amount of time fathers or mothers spend with their children or how much time people spend with colleagues and friends. It also is possible to determine how much time people spend

working outside of the office. All of this information can help researchers understand how people in the United States are dividing their time among the duties of childcare; the demands of their jobs; their need to relax or exercise; and their religious, volunteer, and other commitments.

Many other countries have done time-use surveys, and more are planning to conduct them in the future. Time-use data are currently collected in North America, South America, Europe, Australia, and New Zealand. ATUS was designed to ensure that time-use information in the United States can be compared, at broad levels, with information from other countries.

## CHAPTER 2: HISTORY OF THE AMERICAN TIME USE SURVEY

### 2.1 DEVELOPMENTAL PHASES

The development of ATUS began in 1991, when it was first discussed at BLS as a statistical policy issue, and continued to January 2003, when ATUS data collection officially began. Since then, the survey has been continuously improved. The 12-year period from 1991 to 2003 is described in four developmental phases, below.

#### **Developmental phase 1: Early interest, 1991-1995**

From 1991 to 1995, BLS began to develop an understanding of other countries' collection of time-use data and the demands for such data in the United States.

- **1991: Unremunerated Work Act**  
This bill, which called on BLS to "conduct time-use surveys of unremunerated work performed in the United States," did not make it out of congressional committee, but it acted as the catalyst for BLS to begin studying the issue of collecting time-use data.
- **1992: Statistics Canada conference**  
Statistics Canada held a conference on the value and measurement of unpaid work. This conference exposed BLS to a gap in the United States Federal Statistical System—there was no measure of time use to enable an estimate of the value of unpaid work.
- **1995: United Nations conference in Beijing, China**  
The U.N. International Conference on the Status of Women again raised the issue of measuring and valuing unremunerated work as a topic of international interest. The conference's Platform for Action (item 206) stated that "national, regional and international statistical agencies should measure, in quantitative terms, unremunerated work that is outside national accounts and reflect its value in satellite or other official accounts that are separate from but consistent with core national accounts."<sup>1</sup>

#### **Developmental phase 2: Feasibility, 1997**

In 1997, BLS recognized a growing interest in time-use data. Consequently, the agency began exploring how researchers had used data from prior studies and how BLS might conduct a time-use survey.

- **1997: BLS Pilot Survey and BLS-MacArthur Conference**  
BLS conducted this trial survey to examine the viability of conducting a time-use survey by telephone in the United States. (This is discussed further in section 2.2.1.)

To present the findings from the pilot study and to become acquainted with time-use data and researchers, BLS cosponsored a conference with the MacArthur Foundation entitled "Time Use, Nonmarket Work and Family Well-Being." Three positive developments that arose from this conference included:

1. The introduction of BLS to the international community of time-use researchers and survey practitioners;

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<sup>1</sup> United Nations, 1995.

2. The presentation of evidence by researchers that time-use data were analytically very important and that the lack of a time-use survey was "the biggest single gap in the Federal Statistical System"<sup>2</sup>; and
3. The opportunity for the BLS time-use working group to receive critical feedback on the pilot study and advisement on the direction of work in the subsequent developmental phase.

**Developmental phase 3: Development of specifications, 1998-1999**

From 1998 to 1999, a small team of BLS researchers began to develop specifications for a BLS survey on time use.

- 1998: BLS working group  
The BLS Commissioner asked the working group to develop a more detailed plan for the collection of time-use data. The report that resulted from this request became the blueprint for the American Time Use Survey (ATUS).
- 1999: National Academy of Science (NAS) Conference  
As a followup to the BLS-MacArthur Conference, the NAS held a workshop that explored the importance of time-use surveys and the conceptual and design issues associated with them. The BLS was invited to present its ideas on how it would go about collecting time-use data.
- 1999: Request for funds  
BLS made the first budget request for collecting time-use data to the Office of Management and Budget.

**Developmental phase 4: Building the survey, 2000-2002**

During 2000-2002, the survey specifications were turned into systems. This period included detailed testing, design work, software development, training, and other preparatory work for the survey.

- 2000: Budget for ATUS  
The survey received official approval and funding in December 2000. At this time, joint BLS-Census Bureau teams were formed to oversee the management of the survey, and they began working to fully operationalize the survey.
- 2001 & 2002: Survey development, operations field test, and coding tests  
During 2001 and 2002, developments took place in several areas of the survey, including the building of ATUS data-collection and coding instruments, the development of an activity-coding classification scheme, and the drafting of procedures for the call center. In addition, several decisions about the survey and operations were made during these 2 years; these included decisions about the survey's estimation objectives, the frequency of the survey, the survey reference period, how sampling would be done, what the questionnaire specifications would be, how the survey would be carried out operationally, and how the data would eventually be disseminated (discussed further in sections 2.2.2-2.2.6).
- 2003: Data collection  
January 2003 marked the official beginning of data collection for ATUS.

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<sup>2</sup> Bureau of Labor Statistics and MacArthur Network on the Family and the Economy, "Time Use, Non-Market Work, and Family Well-Being," Summaries of the Time Use Conference, Nov. 20-21 (Bureau of Labor Statistics and MacArthur Foundation, 1997).

## 2.2 FIELD STUDY

Prior to full production in 2003, several tests and field studies were conducted that helped in the development of ATUS. In addition to the 1997 BLS-Westat pilot test, several important tests occurred between funding in December 2000 and full production in January 2003.

### 2.2.1 1997 PILOT STUDY

In 1997, BLS hired a survey contractor, Westat, to conduct a pilot study of two versions of a time-use survey using a telephone methodology. The pilot study drew on other surveys (primarily efforts by Statistics Canada) and provided a foundation for the development of testing specifications for ATUS. The pilot yielded valuable insights on response rates, the collection of simultaneous activities, and how to probe for specific information. In addition, the study guided subsequent research on contact strategies.

### 2.2.2 OPERATIONS TEST

Between April and June 2001, three simultaneous field tests were conducted by BLS and the Census Bureau. Because the field tests were done only once, the agencies decided to use a paper-and-pencil questionnaire and control system rather than automating the survey. Six important operational decisions were made as a result of these three field tests.

1. Households with no telephone would be mailed a \$40 debit card to increase their likelihood of calling in to complete the survey. This debit card would not only give designated persons<sup>3</sup> in these households an incentive to participate, but also reimburse them for the telephone call. No debit cards would be mailed to households with telephones.
2. Cases that had not been completed after the 8-week calling period would not be "recycled" to the field; that is, these households would not receive field visits from Census Bureau interviewers.
3. Designated persons would be eligible to report on only one specific day of the week; no other day of the week would be substituted for this day.
4. Designated persons would be called only on their designated interview day and would not be called prior to this day to set an appointment.
5. Priority Mail would be used to send out the advance materials (ATUS letter and brochure) to designated ATUS persons.
6. All ATUS interviewing would be done using computer-assisted telephone interviewing (CATI); there would be no in-person interviews.

These decisions were made by examining the response rate gains (if any) and the costs of multiple operational approaches and then choosing options that were viable within the ATUS annual budget.

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<sup>3</sup> ATUS randomly selects one person from each household in the sample to respond to the survey. (See section 3.3 on sample design and selection procedures.) This document refers to this household member as the designated person when discussing operations that take place before interview contact is made. Designated persons who respond to the survey are referred to as respondents.

### 2.2.3 COGNITIVE TESTING

BLS engaged in a series of cognitive pretesting efforts designed to ensure that respondents understand survey questions in a manner that is consistent with

the survey developers' intent. BLS requires that all survey questions undergo such testing and, if necessary, be revised until they solicit information consistent with research concepts.

Cognitive research was used to develop and improve ATUS summary questions on work and income-generating activities, secondary childcare, and overnight trips of 2 or more days during the month before the time-use interview.

These followup summary questions, asked after the respondent has completed the time diary, focus on getting additional information on important activities. For the childcare questions, focus groups were used to develop a definition of secondary childcare as well as wording for first-draft questions. For other questions, wording was drafted by ATUS staff and then tested. After drafting, questions were tested following a similar methodology: 20 to 30 people were recruited to participate in a mock ATUS interview followed by a face-to-face cognitive (debriefing) interview. The cognitive interviews were used to assess the ease or difficulty with which the respondents could recall the information required for the ATUS interview; the confidence with which they could report the information; omissions and errors in responses to summary questions; and other issues specific to each of the summary questions. The information gained from these tests was used to modify the summary questions so that they would better elicit the information desired by BLS and the Census Bureau.<sup>4</sup>

### 2.2.4 CODING LEXICON TESTING

After data collection, activities reported by respondents must be coded using a three-tier coding system. To ensure that coding could be done accurately and the analytical value of the data preserved or enhanced, several coding tests were conducted. BLS conducted three tests using coders at the Census Bureau's National Processing Center in Jeffersonville, IN. Each test introduced a revised lexicon and more extensive coding rules and training than the previous one. The third test also evaluated the usability of new coding software. These tests led to numerous changes in the classification system.

An additional test was conducted by BLS and Westat in 2001 to measure coding accuracy and efficiency over time, to evaluate BLS coding training, and to assess the usability of the coding instrument. The tests showed that coding speed increased rapidly with experience, and coding accuracy increased as well, though not as quickly. BLS implemented several of Westat's recommendations to improve the classification system, the coding software, and the coding training.

Further progress was made in improving activity coding up to full production. These advancements include, but are not limited to, the development of rules

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<sup>4</sup> Schwartz, 2000 and 2001

and job aids for training purposes and the implementation of a coding verification and adjudication process.

### 2.2.5 DRESS REHEARSAL

BLS and the Census Bureau conducted an ATUS dress rehearsal between April and August 2002. The purpose of this test was to conduct ATUS in a standard data production environment, incorporating most of the results from the 2001 operations field test. A sample of 7,000 designated persons was drawn from households that had completed the last month of CPS interviews, and these individuals were each assigned a day of the week about which they would be interviewed. Advance letters describing the time-use survey were sent to all designated persons, and those in households without a telephone were offered a \$40 debit card to complete the interview.

The dress rehearsal was important because some operational issues of ATUS required further testing before full production began in 2003. ATUS was the first Census Bureau survey to use conversational interviewing to collect data. This also marked the first time that data from real interviews would be coded using the new ATUS classification system. It also was the first CATI interview designed using Blaise software<sup>5</sup> integrated into the Census Bureau's case management system and conducted at the Jeffersonville telephone center. A large-scale field test was necessary to evaluate the effectiveness of ATUS training modules to adequately prepare interviewers and coders; to determine respondents' reactions to a CATI time-use survey; and to determine whether case management, data collection, coding, and processing systems functioned as planned. The intent was to mirror full-production conditions as closely as possible to work out any operational problems that still remained. An interviewer debriefing after the dress rehearsal established that there were several areas of the training that needed improvement. In addition, various operational problems were fixed, operations management reports were developed, and the need to add a question clarifying volunteer activities was addressed during dress rehearsal.

### 2.2.6 PREFIELDING

From September to December 2002, BLS and the Census Bureau continued full-scale operations to refine the data-collection procedures, the CATI instrument, the calling strategy, and the coding lexicon. Refinements based on the results of the dress rehearsal and debriefing sessions were implemented and evaluated as the survey approached full production in January 2003.

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<sup>5</sup> Blaise software was developed by Statistics Netherlands and is the standard for both survey and coding applications at the Census Bureau.

## CHAPTER 3: SURVEY DESIGN

### 3.1 UNIVERSE

ATUS covers all residents living in households in the United States that are at least 15 years of age, with the exception of active military personnel and people residing in institutions such as nursing homes and prisons.

### 3.2 SAMPLING FRAME

The ATUS sample is drawn from the CPS, so the ATUS universe is the same as the CPS universe. The universe for the CPS is composed of the approximately 105 million households in the United States and the civilian, noninstitutional population residing in those households. From this universe, the CPS selects approximately 60,000 households every month. About one-eighth (or about 7,500) of these retire permanently from the CPS sample each month after their eighth CPS interview attempt. Two months after households complete their eighth CPS interview attempt, they become eligible for selection into the ATUS sample.

### 3.3 SAMPLE DESIGN AND SELECTION PROCEDURES

The ATUS sample is a stratified, three-stage sample. In the first stage of selection, the CPS oversample in the less-populous States is reduced. The CPS is designed to produce reliable estimates at the State and national level. Because of the CPS State reliability requirement, the less populous States are allocated a larger proportion of the national CPS sample than they would get with only a national reliability requirement. ATUS does not have a State reliability requirement. To improve the efficiency of the national estimates from the survey, the CPS sample is subsampled to obtain the ATUS sample, which is distributed across the States approximately equal to the proportion of the national population each one represents.

In the second stage of selection, households are stratified based on these characteristics: the race/ethnicity of the householder, the presence and age of children, and the number of adults in adults-only households. Sampling rates vary within each stratum. Eligible households with a Hispanic or non-Hispanic black householder are oversampled to improve the reliability of time-use data for these demographic groups. To ensure adequate measures of childcare, households with children are also oversampled. To compensate for this, households without children are undersampled.

In the third stage of selection, an eligible person from each household selected in the second stage is randomly selected to be the designated person for ATUS. An eligible person is a civilian household member at least 15 years of age. All eligible persons within a sample household have the same probability of being selected as the ATUS designated person.

### 3.4 SAMPLE SIZE

In 2003, 3,375 households leaving the CPS sample were selected for the ATUS sample each month (approximately 40,500 households annually). Based on the race/ethnicity

of the householder and the presence and age of household children, households were classified into one of 12 possible strata. Table 3.1 lists the number of households sampled each year in 2003 from each of the 12 strata.

Table 3.1. Estimated annual sample size by ATUS sampling strata, 2003

Household type	Race/ethnicity of household reference person in CPS			Total
	Hispanic	Non-Hispanic, black	Non-Hispanic, nonblack	
With at least one child under 6	1,512	1,018	5,372	7,902
With at least one child between 6 and 17	1,381	1,442	7,762	10,585
Single adult, no children under 18	815	1,837	5,891	8,543
Two or more adults, no children under 18	1,451	1,645	10,374	13,434
Total	5,159	5,942	29,399	40,500

Beginning with the sample introduced in December 2003, the monthly ATUS sample was reduced by 35 percent from the level of 3,375 per month to a new level of 2,194 per month. This sample reduction was necessary to bring ATUS costs in line with the annual survey budget. The first year of production provided real cost information for the first time and made it clear that a sample reduction would be necessary to meet future budget requirements. After consideration and statistical analysis, BLS opted to reduce the sample from each stratum by the same proportion. This step reduced the precision somewhat for each group but had less of an effect on the precision of the estimates for the larger groups. This finding, coupled with an understanding that time-use patterns do not generally vary a great deal by race and ethnicity and that the focus of time-use estimation and analyses is likely to be larger population groups (e.g. men and women, employed and unemployed), led BLS to choose this strategy. The number of households sampled annually from each stratum after the sample reduction occurred is shown in table 3.2.

Table 3.2. Estimated annual sample size by ATUS sampling strata, 2004

Household type	Race/ethnicity of household reference person in CPS			Total
	Hispanic	Non-Hispanic black	Non-Hispanic nonblack	
With at least one child under 6	900	744	3,420	5,064
With at least one child between 6 and 17	924	996	4,512	6,432
Single adult, no children under 18	468	1,320	3,600	5,388
Two or more adults, no children under 18	1,032	1,188	7,224	9,444
Total	3,324	4,248	18,756	26,328

### 3.5 SAMPLE ALLOCATION

The monthly sample is then divided into four randomly selected panels, one for each week of the month. To ensure good measures of time spent on weekdays and weekend days, the sample also is split evenly between weekdays and weekend days. During the assignment of sample codes, 10 percent of the sample is allocated to each weekday, and 25 percent of the sample is allocated to each weekend day. The designated persons are then randomly assigned a day of the week about which they will be reporting, and an initial interview week code (the week of the interviewing period when the case is introduced).

### 3.6 RESPONSE RATES

BLS uses the American Association for Public Opinion Research's (AAPOR's) Response Rate 2 formula for determining the ATUS response rates:

$$(C)/(C+R+NC+O+UE)^6$$

Where:

- C = Completes (complete or sufficient partial interview)
- R = Refusals
- NC = Noncontact (uncompleted callbacks; never contacted)
- O = Other (respondent absent, ill, or hospitalized; language barrier, etc.)
- UE = Unknown eligibility (phone number incorrect for household, unconfirmed number, etc.)

The ATUS overall response rate averaged 57 percent in 2003. The response rate for persons with a telephone in the household was 59 percent, whereas the rate for persons in households without a telephone was significantly lower, at 33 percent. A response analysis survey conducted by BLS and the Census Bureau in early 2004, as well as a review of operations data, indicated that the primary reason for nonresponse is that the designated persons are tired from participating in the CPS survey.<sup>7</sup>

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<sup>6</sup> See AAPOR's *Standard Definitions—Final Dispositions of Case Codes and Outcome Rates for Surveys*, 2004.

<sup>7</sup> See 3.2 for information on how ATUS selects respondents from households that have completed all eight interviews for the CPS.

## CHAPTER 4: DATA COLLECTION

### 4.1 ADVANCE MAILER

An advance mailer is sent to all ATUS designated persons to notify them that they have been selected for the ATUS sample. The advance mailer contains a letter and a brochure explaining the nature of the survey and why ATUS contacts CPS respondents and giving ATUS telephone and Internet contact information (see appendixes A and B). The reverse side of the advance letter also includes a list of frequently asked questions designed to help designated persons better understand the survey (see appendix C). All advance mailers are sent by Priority Mail as described in chapter 2.

### 4.2 MODE OF DATA COLLECTION

All ATUS data are collected using computer-assisted telephone interviewing (CATI). The computerized interviewing instrument offers several benefits over a paper questionnaire. First, CATI automatically inserts any answer that a respondent gives in the beginning of a survey, such as a child's name, in corresponding later questions. Next CATI verifies that all questions have been answered and that a respondent's answers are consistent throughout the questionnaire. CATI alerts the interviewer if there is a problem so that it can be resolved during the course of the interview. Also, CATI allows complex skip patterns to be programmed into the questionnaire to ensure consistent data quality and eliminate human error. CATI also uses pop-up text boxes to instruct the interviewer to probe for more information when necessary. Overall, CATI reduces interviewer burden and clerical errors, ensures consistency and better data quality, and makes the interview experience more pleasant for respondents.

When the interview is complete, the tasks of processing, editing, coding, and analyzing the data are expedited because all of the collected information is already stored in the computer. CATI greatly reduces the amount of data entry that is necessary, as well as the errors associated with it.

### 4.3 CALL STRATEGY

The ATUS sample is randomized by day, with 50 percent of the sample reporting about the weekdays, Monday through Friday, and 50 percent reporting about Saturday and Sunday. Designated persons must report about their activities on their designated day, without any substitution of days.

A designated person age 15 or older is selected randomly from each household to participate in the interview, without substitution or proxy responses. All responses must be obtained directly from this designated respondent.

All ATUS interviews are conducted from the U.S. Census Bureau's telephone center at the National Processing Center in Jeffersonville, IN. The interviewers attempt calls in four call blocks throughout the day and are required to make at least one call in each call block until contact is made with each household. The call blocks are 9 a.m. to 11:59 a.m.; 12 p.m. to 4:59 p.m.; 5 p.m. to 8:59 p.m.; and 9 p.m. to 12 a.m. The center uses an automated call scheduler, which tells the interviewers when each

household should be called. Once a household is contacted and the designated person agrees to complete the interview, the interviewer conducts the interview using CATI.

#### 4.3.1 HOUSEHOLDS WITH A TELEPHONE

If a telephone number is available from the CPS, an interviewer at the telephone center calls the household on the designated interview day to obtain a report about the designated person's activities on the previous (diary) day.

When the interviewer enters the CATI system to conduct an interview, the first few screens that appear provide helpful information that was obtained during the CPS interview, such as the household roster and any notes recorded by the last CPS interviewer. For example, the CPS interviewer may note the best time to contact someone in the household.

The interviewer attempts to contact the designated person after reviewing this information. When that person is reached, the interviewer introduces him or herself. Once the interviewer verifies that the designated person received the advance mailer explaining ATUS, the interview begins.

#### 4.3.2 HOUSEHOLDS WITHOUT A TELEPHONE

Households without a phone make up approximately 5 percent of the U.S. population and, therefore, 5 percent of the ATUS sample. To be a nationally representative survey, ATUS includes these households in its sample. These households also receive an advance mailer, but instead of providing a date when the designated person will be called, the letter asks the designated person to call the telephone center on a specified day to complete the interview. In addition to the letter and the brochure, the advance mailer for households that lack a telephone includes an incentive in the form of an inactivated debit card for \$40. The debit card can only be activated with a PIN number provided to the respondent by the interviewer at the completion of the interview.

### 4.4 THE INTERVIEW

The ATUS questionnaire contains both English and Spanish text. The telephone center has several bilingual interviewers who conduct interviews in English but can interview in Spanish when the designated respondent speaks only Spanish or is more comfortable responding in that language.

The ATUS interview is a combination of structured questions and conversational interviewing. It consists of four major topics: The household roster, the time diary, the summary questions, and a section related to the CPS. The portion of the interview relating to the CPS is broken up into four sections: Employment status, looking for work, industry and occupation update, and earnings update. These questions are used to update or confirm time-sensitive CPS data or to fill in missing CPS data. Each section is described below in more detail.

Section	Section description
1: Front	In this section, the interviewer attempts to contact the designated person on the designated day. After contact, the interviewer verifies the designated person's address and informs the designated person that the call may be monitored. If the designated person refuses the interview or someone else in the household refuses for the designated person, the interviewer records who refused and the reason for refusal.
2: Demographics	In this section, the interviewer reviews with the respondent the household roster, which includes the name, sex, birth date, and age of each household member, as well as each member's relationship to the respondent. The interviewer verifies and updates the roster to reflect any changes in the household—such as births or deaths—since the last CPS interview. Roster modifications also include any changes of residence for household members and any errors in the original CPS household roster.
3: Labor force	This section is used to determine whether the respondent worked in the last 7 days or was looking for a job, on layoff, retired, or disabled. The interviewer also asks if anyone in the household owns a business or a farm.
4: Time diary	This part of the interview is used to collect a detailed account of the respondent's activities, starting at 4 a.m. the previous day and ending at 4 a.m. on the interview day. For each activity reported, the interviewer asks how long the activity lasted, who was in the room or accompanied the respondent during the activity, and where the activity took place.
5: Summary questions	<p>After the time diary is complete, the interviewer asks some followup questions to gain additional information on the respondent's work, childcare, and volunteer activities.</p> <ul style="list-style-type: none"> <li>• The interviewer first asks questions to identify activities that were done as part of the respondent's job and then asks about any income-generating activities that were not part of the respondent's main or other job.</li> <li>• Next the interviewer asks about activities and times when a child was in the respondent's care (other than already mentioned primary childcare activities). Secondary childcare activities are captured separately for the respondent's own children that live in the household; own children that live in another household; other (non-own) household children, such as siblings or grandchildren; and non-own nonhousehold children, such as a neighbor's children.</li> <li>• The interviewer then asks the respondent to identify any volunteer activities done for or through an organization.</li> <li>• The last questions in this section elicit information on any overnight trips of 2 or more nights during the month before the interview.</li> </ul>
6: Layoff/looking	In this section, the interviewer asks about the respondent's labor force status. Respondents who reported being on layoff or disabled in section 3 are asked if and how they are looking for work. Those who reported being on layoff also are asked if and when they expect to be recalled to their job.
7: Industry & occupation	Next the interviewer collects or updates information on the respondent's job title and description and on the industry in which the respondent works.
8: Earnings & school enrollment	Lastly, the interviewer collects data on the respondent's usual hours worked and wages, including any overtime pay. Based on this information, the instrument then calculates the respondent's yearly earnings, a figure confirmed by the respondent. The respondent also is asked about school enrollment.
9: Back	After the interview ends, the interviewer records any notes that may be helpful for coding the diary data. If the interview was not completed, the interviewer makes an appointment to call back on the same day or another designated day.

For all parts of the interview except the collection of the diary data (in section 4, above), interviewers read scripted text on the CATI screen and enter the reported responses.

For the time-use diary, the interviewer uses conversational interviewing rather than asking scripted questions. This is a more flexible interviewing technique designed to allow the respondent to report on his or her activities comfortably and accurately. This technique also allows interviewers to use methods to guide respondents through memory lapses, to probe in a nonleading way for the level of detail required to code activities, and to redirect respondents who are off task or providing unnecessary information. As each activity is reported, the interviewer records the verbatim responses on a new activity line. The interviewers are trained to ensure that the respondent reports activities (and activity durations) actually done on the previous (diary) day, not activities done on a "usual" day. Interviewers do this by placing continual emphasis on the word "yesterday" throughout the interview.<sup>8</sup>

#### 4.5 FOLLOWUP PROCEDURES

ATUS interviewers are trained to use all of their skills and knowledge to complete the interview at the time of first contact with the household. If an interview is not completed, the interviewer attempts to set an appointment with the respondent to complete the interview later that day or on the next eligible reporting day. If a respondent refuses to complete the interview, a refusal conversion letter (see appendix D) is mailed to reemphasize the importance of ATUS and to request that the respondent reconsider participating in the survey. The interviewer attempts to contact the respondent again during the 8-week period when his or her household remains in the ATUS sample.

#### 4.6 CONFIDENTIALITY

ATUS data are collected by the Census Bureau under the authority of Title 13, United States Code, section 8. Section 9 of the law requires that all information about respondents be kept strictly confidential and that the information be used only for statistical purposes. Designated persons are informed of their right to confidentiality under Title 13 in the ATUS advance letter and brochure, mailed approximately 10 days before the interview date. The ATUS advance letter also advises designated persons that this is a voluntary survey.

All Census Bureau security safeguards regarding the protection of data files containing confidential information against unauthorized use, including data collected through CATI, apply to ATUS data collection.

The BLS processing system design requires that ATUS data be securely transferred from the Census Bureau server to the BLS server.

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<sup>8</sup> For more information on conversational interviewing, see Michael F. Schober and Frederick G. Conrad, "Does Conversational Interviewing Reduce Survey Measurement Error?" *Public Opinion Quarterly* 61(December 1997):576-602.

## CHAPTER 5: CODING THE DATA

### 5.1 THE CODING LEXICON

The ATUS coding lexicon, or activity classification system, was originally based on the one used for the Australian Bureau of Statistics 1997 time-use survey. During a lengthy developmental phase, which included several coding and usability tests before the start of official ATUS data collection, the ATUS lexicon underwent many revisions. The result is a 3-tiered system, with 17 major, or first-tier, categories, each having 2 additional levels of detail (see appendix E). Each third-tier activity category also contains a list of examples of activities that fall into that category.

Coders at the telephone center assign a six-digit classification code to each diary activity. The first two digits represent the major activity category; the next two digits the second-tier level of detail; and the final two digits represent the third, most detailed level of activity. For example, the ATUS code for "making the bed" is 020101. "Making the bed" is an example under the third-tier category, *Interior cleaning*, which is part of the second-tier category, *Housework*, which falls under the *Household Activities* major category:

02 Household Activities

01 Housework

01 Interior cleaning

02 Laundry

03 Sewing, repairing, and maintaining textiles

04 Storing interior household items, including food

99 Housework, n.e.c.

The final code in every tier is 99, which represents an activity not elsewhere classified (n.e.c.).

Four of the activity categories in published tables are composites of several coding-lexicon categories. For example, the two major coding-lexicon categories of *Socializing, Relaxing, and Leisure* and *Sports, Exercise, and Recreation* are combined into one category called *Leisure and Sports*. (See table 5.1.) See appendix F for a more detailed table linking the ATUS coding lexicon major categories and published tables major categories.

Table 5.1. Bridge between published table categories and 2003 coding lexicon categories

2003 Published Categories	Activity Codes	2003 Lexicon Categories
Purchasing goods and services	07 08 09 Part of 10	Consumer purchases Professional and personal care services Household services Government services
Organizational, civic, and religious activities	14 15 Part of 10	Religious and spiritual activities Volunteer activities Civic obligations and participation
Leisure and sports	12 13	Socializing, relaxing, and leisure Sports, exercise, and recreation
Telephone calls, mail, and e-mail	16 020903 020904	Telephone calls Household and personal mail Household and personal e-mail

## 5.2 CODING RULES AND DESK AIDS

Because of the complexity of coding everyday activities reported in many different ways into fairly narrowly defined lexicon categories, coders use a comprehensive set of rules to guide their decisions. Rules applicable to each major lexicon category are available in a rules manual, as are miscellaneous rules—such as how to code passive, waiting, or watching activities—that apply to many categories. The miscellaneous rules also address conceptual issues in some detail, such as how to know when an activity is a helping one as opposed to the actual activity itself (e.g. how to determine if “feeding my neighbor’s dog” is a helping activity or pet care).

Numerous activities can conceivably be coded in more than one place in the lexicon, depending on several factors. For example, computer or Internet use may be coded as work, education, volunteering, or relaxing, depending on how the respondent identified the activity during data collection. For ambiguous activities, coders use flow charts that walk them through the logic required to make the correct activity code assignments. (See appendix G for coding rules.)

## 5.3 CODER QUALIFICATION

ATUS is unique in that it is the only survey conducted by the Census Bureau that uses the same personnel to do interviewing and coding, rather than referring collected data to coding specialists. Interviewers code one another’s cases, though never their own. This process is used because having knowledge of the coding lexicon categories gives interviewers a better understanding of the importance of probing for helpful information and recording activities properly, both of which make coding easier.

The telephone center uses a qualification process to prepare and certify coders for full production coding. New coders must, within 30 days of completing training, code 40 “live” production cases that have been loaded into a qualification panel. Those who achieve an error rate of less than 12 percent are qualified for coding production panels. Those whose error rate is greater than 12 percent must code another 40 cases.

If, after coding a second set of 40 cases, a coder's error rate is still over 12 percent, that coder must undergo refresher training, then code another 40 cases within 30 days of completing training. If the error rate is still over 12 percent after coding the third set of 40 cases, the coder is removed from ATUS.

For any qualified coder whose production panel error rate exceeds 12 percent (even if previous panel error rates met qualification standards), the coder is removed from production and placed in a requalification cycle similar to the one described above.

## 5.4 ACTIVITY CODING

Data from completed cases are loaded into the ATUS coding application, which has multiple windows that let coders simultaneously view the activity being coded, the coding categories, and the respondent's time diary. In the time diary window, the following information is included for each activity: Start time; duration; person(s) in the room with or accompanying the respondent; location; and whether or not the respondent identified the activity done as part of one's job, another income-generating activity, or volunteering through an organization. Tabs across the top of the screen can be accessed for further information on the respondent's industry and occupation, the ages and relationships of household members, and any notes about the case that the interviewer added for assistance with coding. The coding software also includes a search feature that helps coders find the correct code for ambiguous activities and increases coding speed.

Some activities are coded automatically before the coders see them. During data collection, interviewers have the option of using one of 13 precodes for commonly reported activities (such as sleeping or grooming) rather than typing the activity verbatim into the activity line of the time diary. Activities entered in this way are automatically assigned the correct corresponding six-digit lexicon activity codes before the diary data are loaded into the coding instrument. Although the autocoded activities show up in proper sequence in the coding instrument's diary, they cannot be changed by the coder.

## 5.5 VERIFICATION AND ADJUDICATION

The accuracy and consistency of coded ATUS data are critical to the usefulness and validity of the survey. For quality assurance purposes, the telephone center uses a verification and adjudication system. All cases are 100-percent verified, meaning that two different coders code each case. First, a coder assigns six-digit activity codes to all time-use data from a completed case (although not a case that he or she completed as an interviewer). Second, a different coder (the "verifier") recodes the same case without seeing the original coder's assigned codes. If the original coder and the verifier agree on all activity codes, the case is closed, and the data are ready for processing. If any activities have mismatching activity codes, the entire case is transferred to an adjudicator, who is a supervisor or coach with ATUS coding experience. The adjudicator assigns a correct code for any disputed activities then closes the case. The adjudicator also assigns an error code to the coder or verifier (or both) who assigned the incorrect code. Through coding error reports and informal discussions, supervisors or coaches give coders and verifiers feedback on why any activities were recoded.

## 5.6 INDUSTRY AND OCCUPATION CODING

Activity coding is of primary importance to the survey. But ATUS also collects or updates demographic and labor force data that were first collected when the respondent's household participated in the CPS, some of which must also be coded. Information on the respondent's industry and occupation must be coded to the Census Bureau's industry and occupation (I&O) classification schemes, which are based, respectively, on the 2000 Standard Occupational System and the 2002 North American Industry Classification System.

For cases in which the respondent's industry and occupation have not changed since the final CPS interview, the four-digit Census Bureau industry and occupation codes are retrieved from the data obtained from the last CPS interview and entered into the ATUS data file. No further industry and occupation coding is required for these cases. However, when respondents have changed jobs since the final CPS interview, meaning their industry of employment or occupation has changed, the I&O codes must be recoded at the National Processing Center (NPC) according to the updated information.

NPC coding specialists use a computer-assisted coding system specially designed for I&O coding. Computer terminals display the industry and occupation descriptions recorded by the interviewers from the respondents at the time of the ATUS interview. Both an industry code and an occupation code are assigned for each record; each code is determined at a four-digit level of detail.

I&O coding also involves 100-percent verification, with two coders coding each record. If the first and second coders do not agree on a specific code, the second coder reconciles the discrepancy and assigns the final code. A supervisor provides feedback on production and quality to the coding staff.

## CHAPTER 6: DATA PROCESSING, EDITING, AND IMPUTATION

### 6.1 DATA PROCESSING

The goal of ATUS data processing is to transform a raw data file, as collected by the interviewers, into a microdata file that can be used to produce estimates of time spent in daily activities. Data processing is done at the Census Bureau in Suitland, MD. Eight SAS data sets are created from the main input file during data processing.

### 6.2 EDITING

Once these files are created, a verification/reformat program determines initial data quality before any editing or other processing takes place. A report is generated for each case based on the item being checked and the associated variables. Even though some editing takes place in the instrument at the time of the interview—such as corrections to the household roster, checks for missing diary activities, and checks for invalid trip duration—further editing is required once all the data are received.

*Section 6.2.1* discusses CPS/ATUS edits, *section 6.2.2* discusses CPS edits, and *section 6.2.3* discusses ATUS-specific edits.

#### 6.2.1 ATUS/CPS EDITS AND IMPUTATION

ATUS household edits and school enrollment edits are slightly different from the CPS edits because ATUS uses fewer variables and different age ranges. ATUS demographic edits are performed on demographic variables using a modified version of the CPS edits.<sup>9</sup> After ATUS/CPS household and demographic edits are run on the ATUS file, the CPS edit programs are executed on the file. This step helps maintain continuity between the CPS and ATUS estimates.

##### Household module

This module performs edits for items pertaining to the household, such as age and sex of household members. It classifies households as interviews or noninterviews and edits items appropriately. Hot-deck allocations defined by geography are used in this edit. (See *exhibit 6.1* for a description of allocation/imputation methods used by ATUS.)

##### Demographic module

This module ensures consistency between all demographic variables for all individuals within a household. It ensures that all interview households have one and only one designated respondent and that entries stating marital status and spouse are all consistent. The program uses longitudinal editing, hot-deck allocation by demographic characteristics, and relational imputation. Demographic recodes are created for both individual and family characteristics.

##### School enrollment module

School enrollment items, such as school level and full-time/part-time school attendance, are edited for individuals aged 15 to 49. Hot-deck allocation based on age, race, and sex is used.

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<sup>9</sup> See [www.census.gov/prod/2002pubs/tp63rv.pdf](http://www.census.gov/prod/2002pubs/tp63rv.pdf) for more information on CPS design and methodology, including CPS edits.

### 6.2.2 CPS EDITS AND IMPUTATION

The edits for the labor force variables, income and occupation variables, and earnings variables are the same edits used in the CPS.

#### Labor force module

This module establishes a major labor force status recode that classifies adults as employed, unemployed, or not in the labor force. Based on this recode, the labor force items related to each classification are edited; longitudinal editing and hot-deck allocations are used.

#### Industry and occupation module

This module assigns four-digit industry and occupation codes to eligible persons for whom the industry and occupation coders were unable to assign a code; relational and hot-deck allocations are used.

#### Income module

This module performs edits on earnings-series items such as annual, weekly, or hourly rates of pay; hours worked; and overtime pay. Usual weekly earnings recode puts earning amounts in a comparable form. Hot-deck allocation also is used here.

*Exhibit 6.1*

## IMPUTATION METHODS

**Relational imputation.** Relational imputation infers the missing value from other characteristics on the person's record or from records of others in the same household. For instance, if race is missing, it is assigned based on the race of another household member or, failing that, taken from the previous record in the file. Missing occupation codes are sometimes assigned by viewing the industry codes and vice versa. This technique is used exclusively in the demographic and industry and occupation edits. If missing values cannot be assigned using this technique, they are assigned using one of the two following methods.

**Longitudinal assignments.** Longitudinal assignments are used primarily in the labor force edits. If a question is blank, the labor force module examines the most recent previous month's data to determine whether there was an entry for that item. If so, the previous month's entry is assigned; otherwise, the item is assigned a value using the appropriate hot deck, as described next.

**Hot-deck allocation.** This method assigns a missing value from a record with similar characteristics. Hot decks are defined by characteristics depending on the nature of the question being referenced. For instance, most labor force questions use only age, race, sex, and occasionally another labor force item such as full- or part-time employment status. This means the number of cells in labor force item hot decks is relatively small, perhaps less than 100. On the other hand, the weekly earnings hot deck is defined by age, race, sex, usual hours, occupation, and educational attainment. This hot deck has several thousand cells.

### 6.2.3 ATUS-SPECIFIC EDITS AND IMPUTATION

All records with fewer than five activities (such as sleeping, eating, and watching TV) reported in the daily time diary and all records with activities (other than "don't know" and "refuse") covering fewer than 21 hours (incomplete records) are excluded from the estimation process. Complete records undergo several edits in which imputation is performed on ATUS-specific data elements. The ATUS-specific data elements covered and their edits are described below.

#### **"Who" code edits**

ATUS collects information ("who" codes) on the person(s) in the room with or accompanying the respondent during his or her activities. Yet several activities are ineligible for a "who" code assignment. Therefore, one of the "who" code edits strips a "who" code from activities for which the codes would be inappropriate (such as sleeping, grooming, and work). No imputation is performed on missing "who" codes.

#### **"Where" code edits**

ATUS collects information ("where" codes) on the location or means of travel associated with the respondent's activities. Because not all activities are eligible for a "where" code assignment, one of the "where" code edits strips a "where" code from activities for which the codes would be inappropriate (such as sleeping and grooming). Another "where" code edit replaces inappropriate "where" codes with more realistic "where" codes. If the respondent does not supply "where" code information for eligible activities, a set of rules is used to determine the missing location information.

#### **Childcare edits**

ATUS collects data for several categories of secondary childcare (secondary childcare refers to care given by an adult who is performing some other primary activity, such as preparing a meal). If the respondent does not answer secondary childcare questions for any reason, summary childcare times are allocated by substituting time spent on activities when children were present, excluding primary childcare activities.

#### **Spouse/unmarried partner employment status**

ATUS collects information on the employment status and usual working hours of the respondent's spouse or unmarried partner. If this information is incomplete, longitudinal allocation is used to assign values from CPS. In the rare cases in which the information also is missing in CPS, allocations are made based on the age of the spouse or unmarried partner.

#### **Manual edits**

ATUS staff review the data carefully after the editing process and occasionally find inconsistencies that need to be investigated using verbatim interviews. Occasionally manual edits are made on various data elements. These are usually demographic variables, such as relationship to the respondent, age, or sex.

### 6.3 ADDITIONAL DATA EDITS

In addition to certain consistency edits performed by computer software during the interview and the various edits mentioned in the previous sections of chapter 6, other edits are performed on the data. These other edits are data-suppression edits for confidentiality (any data elements identifying the respondent are suppressed).

Once the data have been through data processing, editing, and imputation, the nine edited SAS data sets (*see exhibit 6.2*) are then created and given to BLS for analysis, further processing, and eventual publication. After a careful review of the data, some additional manual edits are made to selected elements.

#### *Exhibit 6.2*

#### DATA-PROCESSING FILES

*Eight SAS data sets* are created from the main input file during data processing. These files are listed below. Variable names appear in parentheses.

**ATUS-CPS file.** This file contains one record per household member. It also contains the ATUS case ID number (TUCASEID) and the ATUS person line number (TULINENO).

**Respondent file.** This file contains one record per household and data on both CPS MIS-8 and ATUS variables, including the information from the control card, employment status, outcomes to the summary questions, layoff/looking status, income, and occupation and earnings information. Only complete and sufficient partial cases (at least five diary activities covering at least 21 of 24 hours) are included in the Respondent file.

**Roster file.** This file contains one record per household member in ATUS; variables indicate household membership status, sex, relationship to designated respondent, and age.

**Activity file.** This file contains the ATUS diary, section 4 of the instrument. There is one record per activity reported in the diary. The diary data includes the activity code, the activity duration, start and stop times, and where the activity took place. This file also includes data collected in section 5 of the instrument pertaining to paid work, childcare, and volunteer activities.

**Who file.** This file contains the 'who' information collected in section 4 of the ATUS instrument. There is one record for each person that the respondent reported being in the room with or accompanied by during each activity. Demographic data from the household roster are also included when the person accompanying the respondent is a household member.

**Case history:** This file contains one record per case and provides refusal information, timing data, the ATUS interviewer and coder ID's (scrambled for privacy), and interview quality indicators.

**Call history.** This file contains one record for each attempt to collect data from the respondent for every case in a data month.

**Weighting file.** This file contains the 160 replicate weights for ATUS (see chapter 7).

## CHAPTER 7: WEIGHTS AND ESTIMATION

### 7.1 WHY WEIGHTS ARE NECESSARY

Users need to apply weights when computing estimates using ATUS data because simple tabulations of unweighted ATUS data produce misleading results. These weights have already been calculated and are found on the Respondent file. Users may simply apply them when generating estimates.

The ATUS weights compensate for three important aspects of the sampling and data-collection process:

- ATUS is based on a stratified random sample, with some demographic groups oversampled to ensure adequate sample size for detailed estimates. The weights ensure that each group is correctly represented in the population.
- The ATUS sample is not uniformly distributed across the days of the week. About 25 percent of the sample is assigned to report on each of the 2 weekend days, and 10 percent of the sample is assigned to each of the 5 weekdays. Hence, unweighted tabulations overestimate time spent in activities more often done on weekends. The weights are constructed so that each day of the week is correctly represented for the sample month.
- Response rates differ across demographic groups and days of the week. For example, men have lower response rates than do women, so the weights for male respondents are larger, on average, than those for female respondents. The weights ensure that groups and days of the week are correctly represented in spite of differing response rates.

The ATUS final weights indicate the number of person-days the respondent represents. Thus, summing the weights of all respondents for a given month yields the number of person-days in that month (the total population times the number of days in the month). These weights can be used to estimate monthly, quarterly, and annual averages.

### 7.2 CALCULATION OF WEIGHTS

Generating ATUS weights involves several steps. Because ATUS cases are selected from the Current Population Survey (CPS), the CPS weights (after the first-stage adjustment) are the basis for ATUS weights. These base weights are adjusted to account for the fact that less populous states are not oversampled, as they are in the CPS. Further adjustments are made to account for the probability of selecting each household within the ATUS sampling strata and the probability of selecting each person from each sample household.

The nonresponse adjustment increases the weights of records of interviewed persons to account for eligible sample persons who were not interviewed in the ATUS. This adjustment is computed separately for each reference day.

Benchmark weights are constructed so that population totals for selected subpopulations match corresponding totals from the CPS. The benchmarking adjustment is made using a two-step, iterative procedure that adjusts the weights for the ATUS sample cases so that the following are true:

- ATUS weighted estimates of persons in age, gender, race, and ethnicity cells match corresponding CPS estimates. Race and ethnicity categories are Hispanic, black non-Hispanic, and nonblack non-Hispanic. Age categories are 5-year groups up to age 75. (Many of the age cells are collapsed for Hispanics and black non-Hispanics.)
- ATUS weighted estimates of the number of persons in gender, educational attainment, and household-type cells match corresponding CPS estimates. Educational attainment is broken into two categories—more than high school, and high school diploma or less. The two household types are those with children and those without children.

Final weights are constructed by multiplying the benchmark weight for each respondent by a factor related to that respondent's reference day. This factor forces the sum of the weights for weekdays, Saturdays, and Sundays to match the number of person-days in the month that correspond to weekdays, Saturdays, and Sundays. This ensures that the fraction of total person-days accounted for by Saturdays, for example, matches the fraction of days in the month that are Saturdays. If no data are collected due to a holiday—for example, no data are collected about the Wednesday before Thanksgiving because the call center is closed on Thanksgiving—the weights for the corresponding category of days (in this case, weekdays) are inflated to compensate.

### 7.3 PRODUCING ESTIMATES WITH ATUS PUBLIC USE FILES

While numerous types of estimates and analyses can be produced using ATUS public use files, the four formulas below satisfy the needs of many users.

**Average hours per day.**  $\bar{T}_j$ , the average number of hours per day spent by a given population engaging in activity  $j$ , is given by

$$\bar{T}_j = \frac{\sum_i fwt_i T_{ij}}{\sum_i fwt_i}$$

where  $T_{ij}$  is the amount of time spent in activity  $j$  by respondent  $i$ , and  $fwt_i$  is the final weight for respondent  $i$ .

Examples of this type of estimate are the average number of hours per day that people spent watching TV, the average number of hours per day that men spent working, or the average number of hours per day that children under 18 spent doing homework.

**Daily participation rates.**  $P_j$ , the percentage of the population engaging in activity  $j$  on an average day, is computed using

$$P_j = \frac{\sum_i fwt_i I_{ij}}{\sum_i fwt_i}$$

where  $I_{ij}$  is an indicator that equals 1 if respondent  $i$  engaged in activity  $j$  during the reference day and 0 otherwise, and  $fwt_i$  is the final weight for respondent  $i$ .

This formula allows users to estimate the percentage of people who watched TV on an average day, the percentage of men who worked on an average day, or the percentage of children under 18 who did homework on an average day.

Note that  $P_j$  does not represent the proportion of people who participate in activity  $j$  over periods longer than a day—for example, the percentage of persons who performed a volunteer activity at some time during 2003. Such a proportion is at least as large as the average proportion who volunteered per day in 2003 (and almost certainly larger). The proportion of people participating in any given activity cannot be computed from time diary data for any period longer than a day.

**Number of participants.**  $Num_j$ , the number of persons engaging in activity  $j$  during an average day, is given by

$$Num_j = \sum_i \frac{fwt_i I_{ij}}{D}$$

where  $fwt_i$  is the final weight for respondent  $i$ ,  
 $I_{ij}$  is an indicator that equals 1 if respondent  $i$  participated in activity  $j$  during the reference day and 0 otherwise, and  
 $D$  is the number of days in the estimation period (for example, 365 for annual averages for years other than leap years).

Using this formula, users can compute statistics such as the total number of people who watched TV per day, the total number of men who worked per day, or the total number of children under 18 who did homework per day.

**Average hours per day of participants.**  $\bar{T}_j^P$ , the average number of hours spent per day engaged in activity  $j$  by people who participated in that activity on that day, is given by

$$\bar{T}_j^P = \frac{\sum_i fwt_i I_{ij} T_{ij}}{\sum_i fwt_i I_{ij}}$$

where  $T_{ij}$  is the amount of time spent in activity  $j$  by respondent  $i$ ,  
 $fwt_i$  is the final weight for respondent  $i$ , and  
 $I_{ij}$  is an indicator that equals 1 if respondent  $i$  participated in activity  $j$  during the reference day and 0 otherwise.

Examples of this type of estimate are the average number of hours per day that people who watched TV during a day spent watching, the average number of hours that men

who worked during a day spent working, or the average number of hours per day that children under 18 who did homework during a day spent doing it.

#### Linking to CPS public use files

The ATUS public use files contain most of the variables available on the CPS public use files, but there are some exceptions (such as detailed geographic information). Thus, users may wish to link ATUS files to the CPS public use files to obtain these variables. This linking can be done using the fields QSTNUM, OCCURNUM, HRMONTH, and HRYEAR4. The CPS public use data are available for download on DataFerrett in monthly files at <http://dataferrett.census.gov/TheDataWeb/index.html>. To link all ATUS cases with the last CPS interview, users have to link to CPS files for 15 months, from August 2002 through October 2003. This is because a December ATUS case, for example, may have been interviewed last for CPS in July, August, September, or October. Additionally, CPS covers multiple months, and therefore, each ATUS household may be linked to up to 8 months of CPS interview information.

#### Example - Estimating the average amount of time Americans spend watching TV

To estimate the amount of time Americans spend watching TV per day based on answers to the survey, the user must obtain variables from two of the ATUS public use data files, the Activity file and the Respondent file.

Following are the variables needed and their file locations:

TUTIER1CODE	Activity file	First two digits of activity code
TUTIER2CODE	Activity file	Third and fourth digits of activity code
TUTIER3CODE	Activity file	Fifth and sixth digits of activity code
TUACTDUR24	Activity file	Total length of time spent doing activity
TUFINLWGT	Respondent file	ATUS final weight

TUCASEID is needed to link the Activity and the Respondent files.

First, the total amount of time that each respondent spent watching TV must be computed. This can be done by looking at each case and adding up the TUACTDUR24 durations for all activities that have TUTIER1CODE = 12 and TUTIER2CODE = 03 and TUTIER3CODE = 03. (The activity code for "watching TV" is 120303).

This total amount of time spent watching TV for each case is multiplied by the TUFINLWGT variable from the Designated Person file ( $TUFINLWGT \times \text{Total time watching TV}$ , as shown in the following table excerpt). Then TUFINLWGT and the calculated  $TUFINLWGT \times \text{Total time watching TV}$  are summed for all cases (not all cases are shown in the table excerpt). Finally, these totals are used in the average-hours-per-day formula.

TUCASEID	Total time watching TV	TUFINLWGT	TUFINLWGT * Total time watching TV
20030100000001	325	3958080.046	1286376015
20030100000002	60	1720456.748	103227404.9
20030100000003	0	3674575.107	0
20030100000004	265	5209257.088	1380453128
...	...	...	...
Total		82,232,497,092.65	12,673,089,430,782.60

$$\bar{T}_j = \frac{\sum_i fwt_i T_{ij}}{\sum_i fwt_i} = 12673089430782.60 / 82232497092.65 = 154.11 \text{ minutes} = 2.57 \text{ hours}$$

#### 7.4 LIMITATIONS OF THE DATA

While attempts have been made to collect the most accurate data possible, the ATUS data do have limitations. With the exception of childcare, information on secondary activities (activities that are done at the same time as the primary activity) is not collected. This could lead to underestimates of the amount of time people spend doing activities that are frequently done in combination with other activities. For example, ATUS estimates likely underestimate the amount of time people spend listening to music since so many people listen to music while doing other things.

Survey estimates are subject to nonsampling errors that may arise from many different sources, such as an inability to obtain information from all households in the sample, data entry errors, coding errors, and misinterpretation of definitions. Errors also could occur if nonresponse is correlated with time use. Nonsampling errors were not measured. However, the Census Bureau uses quality-assurance procedures to minimize nonsampling data entry and coding errors in the survey estimates.

## CHAPTER 8: PUBLICATIONS AND PUBLIC USE DATA FILES

### 8.1 PUBLICATIONS

#### 8.1.1 BLS PUBLICATIONS

Beginning with the release of 2003 data in September 2004, BLS published what will become an annual press release on the ATUS Web site, [www.bls.gov/tus/](http://www.bls.gov/tus/). The annual release will include descriptive highlights and selected tables showing estimates of time-use data for the previous year. The ATUS Web site also contains a list of titles of, and links to, ATUS-related papers published in BLS publications, as well as BLS working papers. The ATUS staff plans to periodically release topical issues papers on the ATUS Web site.

#### 8.1.2 NON-BLS PUBLICATIONS

Analyses of ATUS data or survey methods likely will appear in a broad range of scholarly journals. Past papers have appeared in the *Journal of Economic Perspectives* and *Survey Methodology*. Many researchers have indicated an interest in ATUS data, and they likely will publish numerous papers in economic, sociological, transportation, and other journals.

#### 8.1.3 UNPUBLISHED TABLES

In addition to the selected tables published with the annual press release, ATUS data are compiled in numerous tables showing time use by various groups of respondents. These include tables of time use by various combinations of respondents' demographic characteristics, marital status, employment status, educational attainment, geographic location, and the presence and age of household children. These unpublished tables are available in PDF format on request.

### 8.2 PUBLIC USE DATA FILES

Twice each year, ATUS microdata files will be released. These files contain records of respondents' answers to the survey questions as well as other information about the respondent and his/her household. These data are intended for users who wish to do their own tabulations and analyses.

The first release will include detail about respondents' characteristics and their time use in the following files: Household data from the CPS MIS-8, household data from ATUS, demographic data from ATUS, the ATUS diary, and the "Who" file from ATUS. The second release will include data on ATUS survey methods, including files on respondent refusal and interview timing and the ATUS call history. (For descriptions of the ATUS data-processing files, see *exhibit 6.2*.)

ATUS summary files will be released once each year. These files will include respondents' demographic data, along with the cumulative time they spent doing each of the activities reported on their diary day. This differs from data available in the microdata files, which include detail for each occurrence of an activity.

The microdata and summary files will be released in both SAS and flat file formats, downloadable from the ATUS Web site. In accordance with BLS and Census Bureau policies that protect respondents' privacy, identifying fields will be removed from the data, and some responses may be edited to protect the confidentiality of ATUS respondents.

### 8.3 INFORMATION AND UPDATES

The ATUS Web site is a resource for up-to-date information about the American Time Use Survey. It includes background information about the survey, as well as links to time-use news releases; publications; and, once they are released, the microdata files. The ATUS home page is available at [www.bls.gov/tus/](http://www.bls.gov/tus/).

Information about ATUS also is available by e-mail ([ATUSinfo@bls.gov](mailto:ATUSinfo@bls.gov)) or by telephone (202-691-6339).

The ATUS staff maintains two lists of individuals interested in ATUS updates. The purpose of these lists is to announce upcoming press releases and issues papers (list one) and the availability of new public use data files (list two). If you would like to subscribe to either or both of these lists, e-mail [ATUSinfo@bls.gov](mailto:ATUSinfo@bls.gov). Be sure to indicate which list you would like to subscribe to. Please also indicate if you are a member of the media.

## CONCEPTS AND DEFINITIONS

### [1. Operations and estimation terms](#)

### [2. Activity definitions](#)

#### 1. Operations and estimation terms

*Average hours per day.* The average number of hours spent in a 24-hour day (between 4 a.m. on the diary day and 4 a.m. on the interview day) doing a specified activity. Estimates are adjusted for variability in response rates across days of the week.

*Day of the week.* Estimates for weekdays are an average of estimates for reports about Monday through Friday. Estimates for weekend days and holidays are an average of reports about Saturdays, Sundays, and the following holidays: New Year's Day, Easter, Memorial Day, the Fourth of July, Labor Day, Thanksgiving Day, and Christmas Day. In 2003, data were not collected about Thanksgiving Day or Christmas Day.

*Designated day.* The day of the week on which a designated person will be called about the previous day. For example, a person with a designated day of Tuesday will be called for up to 8 consecutive Tuesdays for an interview about what happened on Monday.

*Diary day.* The diary day is the day about which the designated person reports. For example, the diary day of a designated person interviewed on Tuesday is Monday. Diary days are assigned, and designated persons may not substitute another day of the week on which to report.

#### *Employment status.*

##### *Employed*

All persons who, at any time during the 7 days prior to the interview:

- 1) Did any work at all as paid employees; worked in their own business, profession, or on their own farm; or usually worked 15 hours or more as unpaid workers in a family-operated enterprise; and
- 2) All those who were not working but had jobs or businesses from which they were temporarily absent due to illness, bad weather, vacation, childcare problems, labor dispute, maternity or paternity leave, job training, or other family or personal reasons, whether or not they were paid for the time off or were seeking other jobs.

##### *Employed full time*

Full-time workers are those who usually worked 35 hours or more per week at all jobs combined.

##### *Employed part time*

Part-time workers are those who usually worked fewer than 35 hours per week at all jobs combined.

##### *Not employed*

Persons are not employed if they do not meet the conditions for employment. The not employed include those classified as unemployed as well as those classified as not in the labor force (using CPS definitions)

**Household.** A household consists of all persons—related family members and all unrelated persons—who occupy a housing unit and have no other usual address. A house, an apartment, a group of rooms, or a single room is regarded as a housing unit when occupied or intended for occupancy as separate living quarters. A *householder* is the person (or one of the persons) in whose name the housing unit is owned or rented. The term householder is never applied to either husbands or wives in married-couple families but relates only to persons in families maintained by either men or women without a spouse.

**Household children.** Household children are children under age 18 residing in the household of the ATUS respondent. The children may be related to the respondent (such as their own children, grandchildren, nieces or nephews, or brothers or sisters) or not related (such as foster children or children of roommates or boarders). For secondary childcare calculations, respondents are asked about care for household children under age 13.

**Own children.** This refers to the respondent's own children, whether they live in the respondent's household or in another household. Stepchildren are considered own children, although foster children are not.

**Population versus participant measures.** Some ATUS tables refer to time use by a population group, while others restrict analysis to those who reported participating in a particular activity. Tables that refer to a population—such as all persons or all employed persons—include estimates that take into account every respondent, even those who did not engage in a specified activity on the diary day. This could result in low averages for the population for activities that are done infrequently (such as volunteering) or are of short duration. Tables that are restricted to “participants” include only the time durations for specific activities if the respondent reported doing the activity on the diary day.

**Primary activity.** A primary activity is the main activity a respondent was doing at a specified time.

**Secondary/simultaneous activities.** A secondary activity is an activity done at the same time as a primary activity. With the exception of the care of children under age 13, information on secondary activities is not systematically collected in ATUS.

**Secondary childcare.** Secondary childcare is care for children under 13 that is done while doing something else as a primary activity, such as cooking dinner. Secondary childcare estimates are derived by summing the durations of activities during which respondents had a household child or their own nonhousehold child under age 13 in their care while doing other things. Secondary childcare time is further restricted to the time between when the first household child under age 13 woke up and the last household child went to bed. It is also restricted to times the respondent was awake. If respondents report providing both primary and secondary care at the same time, the time is attributed to primary care only.

**“Where” categories.** A where code is provided for each activity reported. Where codes include place codes (e.g. home, workplace, or grocery store) and in-transit codes (car, bus, or airplane).

**“Who” categories.** For each activity reported, respondents are asked “who was in the room with you” or “who accompanied you?” Each household member is assigned a separate “who” code. Generic categories also exist for nonhousehold family members and for others (e.g. neighbors, friends).

## 2. Activity Definitions

***Caring for and helping household members.*** Activities done to care for or help any child or adult in the respondent's household, regardless of relationship to the respondent or the physical or mental health status of the person being helped, are classified here. Caring and helping activities for household children and adults are coded separately in subcategories. Household members are considered children if they are under age 18.

Primary childcare activities include physical care; playing with children; reading with children; assistance with homework; attending children's events; taking care of children's health care needs; and dropping off, picking up, and waiting for children. Passive childcare done as a primary activity (such as "keeping an eye on my son while he swam in the pool") also is included. A child's presence during the respondent's activity is not enough in itself to classify the activity as childcare. For example, "watching television with my child" is coded as a leisure activity, not childcare.

Caring for and helping household members also includes a range of activities done to benefit adult members of households, such as providing physical and medical care or obtaining medical services. Doing something as a favor for or helping another household adult does not automatically result in classification as a helping activity. For example, a report of "helping my wife cook dinner" is considered a household activity (food preparation), not a helping activity, because cooking dinner benefits the household as a whole. By contrast, doing paperwork for another person usually benefits the individual, so a report of "filling out an insurance application for my husband" is considered a helping activity.

***Caring for and helping nonhousehold members.*** Activities done to care for or help any child or adult who is not part of the respondent's household, regardless of relationship to the respondent or the physical or mental health status of the person being helped, are classified here. Caring for and helping activities for nonhousehold children and adults are coded separately in subcategories. Nonhousehold members are considered children if they are under age 18. When done for or through an organization, time spent helping nonhousehold individuals is classified as volunteering rather than as helping nonhousehold members.

Nonhousehold childcare, even when done as a favor or helping activity for another adult, is always classified as nonhousehold childcare, not as helping another adult.

***Consumer purchases.*** Most purchases and rentals of consumer goods, regardless of mode or place of purchase or rental (in person, via telephone, over the Internet, at home, or in a store) are classified in this category. Gasoline, grocery, other food purchases, and all other shopping are further broken out in subcategories

***Eating and drinking.*** All time spent eating and drinking (except when identified by the respondent as part of a work or volunteer activity), whether alone, with others, at home, at a place of purchase, in transit, or somewhere else, is classified here. Time spent purchasing or talking related to purchasing meals, snacks, and beverages is not counted as part of this category; time spent doing these activities are counted in *Consumer Purchases*.

***Education.*** Educational activities include taking classes (including Internet or other distance learning courses); doing research and homework; and taking care of administrative tasks, such as registering for classes or obtaining a school ID. For high school students, before- and after-school extracurricular activities (except sports) also are classified as educational activities. Activities are classified separately by whether the educational activity was for a class for a degree or for personal interest. Educational activities do not include time spent for classes or training that respondents identified as part of their

jobs. Time spent helping others with their education-related activities is classified in the *Caring for and helping* categories.

***Government services and civic obligations.*** This category captures time spent obtaining and using government services, such as applying for food stamps, and purchasing government-required licenses or paying fines or fees. Civic obligations include government-required duties—such as serving jury duty or appearing in court—and activities that assist or influence government processes, such as voting or attending town hall meetings.

***Household activities.*** Household activities are those done by respondents to maintain their households. These include housework; cooking; yard care; pet care; vehicle maintenance and repair; and home maintenance, repair, decoration, and renovation. Food preparation, whether or not reported as done specifically for another household member, is always classified as a household activity, unless the respondent identified it as a volunteer, work, or income-generating activity. For example, “making breakfast for my son” is coded as a household activity, not as childcare. Household management and organizational activities—such as filling out paperwork, balancing a checkbook, or planning a party—also are included in this category.

***Household services.*** Time spent arranging for and purchasing household services provided by someone else for pay is classified here. Household services include housecleaning; cooking; lawn care and landscaping; pet care; tailoring, laundering, and dry cleaning; vehicle maintenance and repairs; and home repairs, maintenance, and construction.

***Personal care.*** Personal care activities include sleeping, bathing, dressing, health-related self-care, and personal or private activities. Receiving unpaid personal care from others (for example, “my sister put polish on my nails”) also is captured in this category. Respondents are not asked who they were with or where they were for personal care activities, as such information can be sensitive.

***Professional and personal care services.*** Time spent obtaining, receiving, and purchasing professional and personal care services provided by someone else for pay is classified in this category. Professional services include childcare, financial services and banking, legal services, medical and adult care services, real estate services, and veterinary services. Personal care services include day spas, hair salons and barbershops, nail salons, and tanning salons. Activities classified here include time respondents spent paying, meeting with, or talking to service providers, as well as time spent receiving the service or waiting to receive the service.

***Religious and spiritual activities.*** Religious activities include those normally associated with membership in or identification with specific religions or denominations, such as attending religious services; participating in choirs, youth groups, orchestras, or unpaid teaching (unless identified as volunteer activities); and engaging in personal religious practices, such as praying.

***Socializing, relaxing, and leisure.*** This category includes face-to-face social communication and hosting or attending social functions. Time spent communicating with others using the telephone, mail, or e-mail is not part of this category. Leisure activities include watching television; reading; relaxing or thinking; playing computer, board, or card games; using a computer or the Internet for personal interest; playing or listening to music; and other activities, such as attending arts, cultural, and entertainment events.

***Sports, exercise, and recreation.*** Participating in—as well as attending or watching—sports, exercise, and recreational activities, whether team or individual and competitive or noncompetitive, falls into this category. Recreational activities are leisure activities that are active in nature, such as yard games like croquet or horseshoes.

**Telephone calls.** This category captures telephone communication, with the following exceptions. Telephone and Internet purchases of consumer goods are classified in *Consumer Purchases*. Telephone calls identified as related to work or volunteering are classified as *Work* or *Volunteering*.

**Traveling.** All traveling is coded here, regardless of mode or purpose. Walking is considered traveling when used to get from one destination (address or building) to another, but not when the primary purpose is exercise.

**Volunteer activities.** This category captures time spent volunteering for or through an organization.

**Working and work-related activities.** This category includes time spent working, doing activities as part of one's job, engaging in income-generating activities (not as part of one's job), and job search activities. "Working" includes hours spent doing the specific tasks required of one's main or other job, regardless of location or time of day. Activities done outside of regular work hours are classified as work if identified by respondents as part of their jobs. "Work-related activities" include activities that are not obviously work but are identified by the respondent as being done as part of one's job, such as having a business lunch or playing golf with clients.

"Other income-generating activities" are those done "on the side" or under informal arrangement and are not part of the respondent's regular job. Such activities might include selling homemade crafts, babysitting, maintaining a rental property, or having a yard sale. Respondents identify these activities as ones they "are paid for or will be paid for."

**APPENDIX A: Advance letter to telephone (no incentive) households**

Ms. Jane Doe  
123 Welcome Drive  
Gladwood, MN 22222

Dear Ms. Doe:

Recently, you or a member of your household participated in the Current Population Survey (CPS), which provides essential information about unemployment in the United States. We thank you for your time and cooperation.

Now we would like to request your continuing help with a brief, voluntary, one-time interview for a new survey: the American Time Use Survey. This survey will help us better understand how people in the United States balance work and family demands with other activities and how our quality of life may be changing as a result.

We are asking for your help instead of calling another household because we can reduce costs and save time. By returning to people who participated in the CPS, we will save tax dollars and collect better information because we can select a group in advance that represents the diverse population of the United States. The survey will also be shorter because we do not need to re-ask some questions that we asked in the CPS.

We have answered some questions on the other side of this letter that you may have about this survey. On [day, date], a U. S. Census Bureau interviewer will be calling you to conduct an interview. If you would prefer to call us in advance to set up a specific time for your interview, we can be reached toll-free at 1-800-331-4706 between the hours of 9 a.m. and 9 p.m.

Your participation in this survey would be extremely helpful. We look forward to speaking with you soon.

Sincerely,

Charles Louis Kincannon  
Director

Enclosure

APPENDIX B: Advance letter to no-telephone-number (incentive) cases

Ms. Jane Doe  
123 Welcome Drive  
Gladwood, MN 22222

Dear Ms. Doe:

Recently, you or a member of your household participated in the Current Population Survey (CPS), which provides essential information about unemployment in the United States. We thank you for your time and cooperation.

Now we would like to request your continuing help with a brief, voluntary, one-time interview for a new survey: the American Time Use Survey. This survey will help us better understand how people in the United States balance work and family demands with other activities and how our quality of life may be changing as a result.

We are asking for your help instead of calling another household because we can reduce costs and save time. By returning to people who participated in the CPS, we will save tax dollars and collect better information because we can select a group in advance that represents the diverse population of the United States. The survey will also be shorter because we do not need to re-ask some questions that we asked in the CPS.

Because your participation is so important, we have enclosed a \$40ATM debit card for you as a way of showing our gratitude. Once you have completed the survey, the interviewer will give you a Personal Identification Number (PIN) that will allow you to activate the card and receive your payment. More information about using the card is enclosed with this letter.

Since we do not have your phone number, it is very important that you call us toll-free between 9 a.m. and 9 p.m. (all time zones) at 1-800-232-1824 on **[day, date]** to complete the survey. If that is not a convenient day to complete the interview, please call to reschedule your interview.

We have answered some questions on the other side of this letter that you may have about this survey. Your participation in this survey is extremely important. We look forward to speaking with you soon.

Sincerely,

Charles Louis Kincannon  
Director

Enclosures

## APPENDIX C: Frequently asked questions (sent with advance letters)

### **How does the survey work?**

This is a telephone survey. You will be interviewed only one time on a specially selected day. The survey should take about 15-20 minutes. We need to speak with you personally for two reasons. First, only you can accurately report how you use your time. Second, we need to be sure that the survey reflects the true diversity of the population. No one else in the household can substitute for you.

### **Why do I have to report on a specific day?**

The activities that people do vary from day to day. To ensure that we represent every day in the year, we must assign interview days in advance.

### **Who uses this information?**

This survey is being conducted by the U.S. Census Bureau for the Department of Labor's Bureau of Labor Statistics. Policymakers, economists, and other researchers will use data from the American Time Use Survey to get a more complete picture of life in the United States. These data will help them compare time spent in various activities by different groups of people and will help guide public policy decisions. The data will provide information about the ways and extent to which people contribute to their families, communities, and the country through unpaid activities, such as housework, volunteering, and childcare.

### **Where can I find out more?**

You can learn about the American Time Use Survey at [www.bls.gov/tus](http://www.bls.gov/tus). Or, you may reach the Census Bureau by e-mail at [ATUSinfo@census.gov](mailto:ATUSinfo@census.gov) or by calling 1-800-232-1824.

### **How do I know my information will be protected?**

Title 29, United States Code, Section 1, and Title 13, United States Code, Section 8, authorizes the Census Bureau to conduct this survey. Section 9 of Title 13, United States Code, requires us to keep all information about you and your household strictly confidential. We will use this information only for statistical purposes.

### **What is some additional information about this process that I should know?**

The U.S. Office of Management and Budget (OMB) has approved this survey and assigned 1220-0175 as the survey's control number. Without OMB approval and this number, we could not conduct the survey.

**APPENDIX D: Refusal Conversion Letter**

Ms. Respondent  
123 Welcome Drive  
Gladwood, MN 22222

Dear Ms. Respondent:

One of our representatives contacted you recently in connection with the American Time Use Survey, but was unable to complete an interview. Because of the importance of your participation, I am writing to ask for your much needed assistance in this new survey.

[INSERT ONE OR MORE OF THE FOLLOWING PARAGRAPHS BASED ON REASON FOR RESPONDENT'S REFUSAL]

**Confidentiality**

We are conducting this survey under the authority of Title 13, United States Code, Section 8. Section 9 of this law requires us to keep all information about you and your household strictly confidential. We may use this information only for statistical purposes. Participation is voluntary and there is no penalty for refusing to answer any questions. However, we need your help to make sure the survey results are as reliable and meaningful as possible.

**Why me? Ask someone else**

You are one of several people in your area and one of many people in the country who were selected to participate in the American Time Use Survey. Answers you provide represent those of many others. Consequently, your participation in the survey is extremely important. Because you were randomly selected and represent others, we cannot substitute any other person for you.

**Minor's Gatekeeper**

\_\_\_\_\_ (insert minor's name) is one of several people in your area and one of many people in the country who have been selected to participate in the American Time Use Survey. The answers s/he provides represent those of many individuals. Consequently, his/her participation in the survey is extremely important. Because we selected \_\_\_\_\_ (insert minor's name), we cannot substitute any other person. We encourage you to allow him/her to participate.

### Tired of surveys

We appreciate the cooperation you have given us previously on the Current Population Survey. The American Time Use Survey is a new survey developed to help measure how people in the United States divide their time between work, family, community, leisure, and other activities. The information that you provide is invaluable in helping policymakers develop recommendations, such as how to assist workers and families, as well as identify services needed for children and the elderly. Your help is needed to make sure the survey results are as reliable and meaningful as possible.

### I'm too busy/Why is it so important?

We realize that you are a busy person and that your time is valuable. However, the information that you provide is also very valuable in helping policymakers to develop recommendations, such as how to assist workers and families, as well as identify services needed for children and the elderly. Your particular help is needed because you will represent not only yourself, but others like you, who live in your community.

I hope this explanation will convince you to give us your much needed help when we contact you again. If you should have any questions, please call us at 1-800-XXX-XXXX. Thank you.

## APPENDIX E: Link to the 2003 Activity Coding Lexicon

CTRL + click on the following: <http://www.bls.gov/tus/lexiconwex2003.pdf>

## APPENDIX F: Bridge between Published Tables Major Categories and ATUS Coding Lexicon Major Categories

2003 Published tables: major categories		2003 Coding lexicon categories
Personal care	01 1701	Personal care activities Travel related to personal care
Eating and drinking	11 1711	Eating and drinking Travel related to eating and drinking
Household activities	All 02, except (020903 020904) 1702	Household activities  (Household and personal mail and messages Household and personal e-mail and messages) Travel related to household activities
Purchasing goods and services	07 08 09 1001 100301 100302 100399  1004  1099 1707  1708 1709 171001 171002 171003  171099	Consumer purchases Professional and personal care services Household services Using government services Waiting associated with using police/fire services Waiting associated with obtaining licenses Waiting associate with using government services or civic obligations, not elsewhere classified Security procedures related to government services/civic obligations Government services, not elsewhere classified Travel related to consumer purchases Travel related to using professional and personal care services Travel related to using household services Travel related to using police/fire services Travel related to using social services Travel related to obtaining licenses and paying fines/fees Travel related to government services and civic obligations, not elsewhere classified
Caring for and helping household members	03 1703	Caring for and helping household members Travel related to caring for and helping household members
Caring for and helping nonhousehold members	04  1704	Caring for and helping nonhousehold members Travel related to caring for and helping nonhousehold members
Working and Work-related Activities	05 1705	Working and work-related activities Travel related to working and work-related activities
Educational activities	06 1706	Education Travel related to education
Organizational, civic, and religious activities	14 15 1002 100303  1714 1715 171004	Religious and spiritual activities Volunteer activities Civic obligations and participation Waiting associated with civic obligations and participation Travel related to religious and spiritual activities Travel related to volunteer activities Travel related to civic obligations and participation

Leisure and sports	12	Socializing, relaxing, and leisure
	13	Sports, exercise, and recreation
	1712	Travel related to socializing, relaxing, and leisure
	1713	Travel related to sports, exercise, and recreation
Telephone calls, mail, and e-mail	16	Telephone calls
	1716	Travel related to telephone calls
	020903	Household and personal mail and messages
	020904	Household and personal e-mail and messages
Other activities, not elsewhere classified	1717	Security procedures related to traveling
	1799	Traveling, not elsewhere classified
	50	Data codes

## APPENDIX G: Link to the 2003 Coding Rules Manual

CTRL + click on the following link to access the 2003 Coding Rules Manual:

<http://www.bls.gov/tus/tu2003coderules.pdf>